

A

Test Registration No. _____

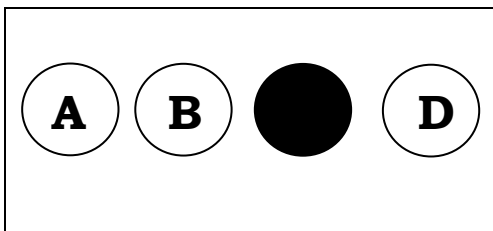
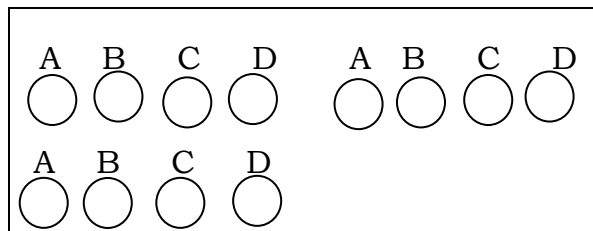


The Maharaja Sayajirao University of Baroda
Faculty of Science

M.Sc. ENTRANCE EXAMINATION

SUBJECT: ZOOLOGY**TIME : 2.30 PM TO 4.00 PM****DAY: MONDAY****DATE: 4th JULY 2022****Important Instructions:**

1. This test booklet is to be opened only when instructed by the invigilators to do so.
2. This booklet carries **100** questions in **13** printed pages. All carry equal marks.
3. For every correct answer, candidate will earn **1** mark, for every wrong answer **0.25** mark will be deducted.
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Correct way of marking answer:**Incorrect way of marking answer:****Invigilator's Signature:** _____

1. How does expression vector differ from cloning vector?
 - A. By restriction site
 - B. Origin of replication
 - C. Control elements
 - D. Marker genes

2. Extra chromosomal bacterial DNA is termed as _____ and is also used as vector.
 - A. Cosmid
 - B. Phasmid
 - C. Plasmid
 - D. Nucleoid

3. One of the following statements for plasmid is correct.
 - A. Plasmids are double stranded DNA
 - B. Plasmids are presents in eukaryotic cell
 - C. Plasmids are made up of RNA and protein
 - D. Plasmids are mitochondrial DNA

4. One of the following enzymes is used to cut DNA molecules in rDNA technology.
 - A. Ligase
 - B. Exonuclease
 - C. Isomerase
 - D. Restriction enzyme

5. Region within the plasmid which contains a site for many restriction enzymes and they are not present anywhere else in the plasmid is called _____.
 - A. Multiple cloning site
 - B. Selective marker site
 - C. Origin of replication site
 - D. Reporter gene

6. Which one of the following laboratory animal is most suitable for corneal relax study?
 - A. Rat
 - B. Mouse
 - C. Hamster
 - D. Rabbit

7. The dog breed used in most of toxicological study is _____.
 - A. Golden retrieval
 - B. Labrador
 - C. Beagle
 - D. German shepherd

8. For what specific reason, euthanasia is preferred for lab animals?
 - A. Less pain
 - B. Growth
 - C. Disturbed neuronal coordination
 - D. Muscle dysfunction

9. Which of these is NOT a reason that *C. elegans* is a good biological model organism?
- A. Its maintenance is very expensive.
 - B. It is transparent.
 - C. Its genome sequence and cell lineage are already known.
 - D. It is parasitic and can be used as a disease model
10. The local body for approval of animal experiment is IAEC. It stands for:
- A. Institutional Animal Ethics Committee
 - B. Institute animal ethical Cooperation
 - C. Institutional animal ethical Cooperation
 - D. Institutional animal ethical Corporate
11. The cylindrical channels in gap junctions are made of:
- A. Connexin
 - B. Collagen
 - C. Fibronectin
 - D. NCAM
12. Which of the following is NOT an extracellular matrix protein?
- A. Fibronectin
 - B. Vitronectin
 - C. Laminin
 - D. Cyclin
13. Actin filaments are involved in all of the following except
- A. Amoeboid movement
 - B. Cytoplasmic streaming
 - C. Contraction of smooth muscle
 - D. Flagellar movement in bacteria
14. Which of the following hormone does NOT act by second messenger system?
- A. Glucagon
 - B. Epinephrine
 - C. Luteinizing hormone
 - D. Aldosterone
15. BCL2 and Bax proteins involved in apoptosis are
- A. Pro-apoptotic and anti-apoptotic
 - B. Both Proapoptotic
 - C. Both antiapoptotic
 - D. Anti-apoptotic and pro-apoptotic
16. _____ part of the metathoracic leg of worker bee is modified into pollen basket.
- A. Femur
 - B. Tibia
 - C. Trochanter
 - D. Tarsal claws
17. _____ is mulberry silkworm.
- A. *Attacus atlas*
 - B. *Bombyx mori*
 - C. *Antheraea mylitta*
 - D. *Antheraea assamensis*

18. Royal jelly is produced from _____ gland of worker bee.
- A. Wax gland
 - B. Abdominal gland
 - C. Mandibular gland
 - D. Antennal gland
19. Which of the statement regarding Lac insect is TRUE?
- A. It secretes lac from the hind part of the body
 - B. The male lac insect is used for large scale production of lac.
 - C. Inserts its proboscis into plant and deposit lac into plant
 - D. Lac insect is microscopic.
20. A specific sign stimulus acts on a specific locus; a lock and key analogy is often used to clarify the relationship of the sign stimulus and _____.
- A. Innate releasing mechanism
 - B. Fixed action pattern
 - C. Action specific energy
 - D. Aggressive behaviour patterns
21. Amazon basin frogs are often brilliantly coloured and easy to spot in the forest. It is an example of:
- A. Batesian mimicry
 - B. Warning colouration
 - C. Mullerian mimicry
 - D. Cryptic colouration
22. Which of the following is signal intended for conspecifics?
- A. Allomones
 - B. Hormones
 - C. Pheromones
 - D. Echo
23. Chemotaxis refers to navigation of movement using:
- A. Chemical gradients
 - B. Light sources
 - C. Water current
 - D. Wind direction
24. Production of delayed effect in receiver by Pheromone is called:
- A. Primer effect
 - B. Releaser effect
 - C. Altruism
 - D. Lee- Boot effect
25. Which of the following is a secondary lymphoid organ?
- A. Bone marrow
 - B. Hypothalamus
 - C. Spleen
 - D. Thymus

26. Which of the following is a reptile showing discontinuous distribution?
- A. Sphenodon
 - B. Varanus
 - C. Peripatus
 - D. Neoceratodus
27. The native of flightless bird, Kiwi, is:
- A. Neo-tropical region
 - B. Ethiopian region
 - C. Australian region
 - D. Oriental region
28. Ethiopian zoogeographic region is a part of ancient landmass known as:
- A. Pangea
 - B. Gondwana
 - C. Laurasia
 - D. Siberia
29. Presence of brood pouch as parental care behavior is found in the fishes of which family?
- A. Clupiidae
 - B. Chiremaididae
 - C. Syngnathidae
 - D. Stromateidae
30. The connecting link between Annelida and Mollusca is:
- A. Neopilina
 - B. Peripatus
 - C. Nautilus
 - D. Balanoglossus
31. The Walrus, Sea lion and Seals are found in the following zoogeographic realm:
- A. Neotropical region
 - B. Australian region
 - C. Nearctic region
 - D. Oriental region
32. During gastrulation, the cellular movements, wherein, the expanding outer layer spreads over the internal surface of the remaining external cells of the embryo, is known as:
- A. Involution
 - B. Invagination
 - C. Epiboly
 - D. Convergence
33. Which amongst the following are amniotic?
- A. Fishes, Amphibians and Reptiles
 - B. Amphibians and Reptiles
 - C. Amphibians, Reptiles and Aves
 - D. Reptiles, Aves and Mammals

34. The cell-tissue grade of organization is found in:
- Protista
 - Porifera
 - Cnidaria
 - Echinodermata
35. Which amongst the following arise from the embryonic ectoderm?
- Epidermal cells, neurons, pigment cells
 - Osteocytes, neurons, cardiocytes
 - Osteocytes, RBCs, cardiocytes
 - Skeletal muscles and cardiac muscle
36. In spermatogenesis, the phase of maturation involves:
- The formation of PGC from the spermatocytes through meiosis
 - The formation of spermatids from primary spermatocytes through meiosis
 - The growth of spermatogonia into primary spermatocytes
 - The formation of spermatogonia from gonocytes through mitosis
37. Which animals produce alecithal eggs?
- Reptiles
 - Prototherian Mammals
 - Birds
 - Eutherian Mammals
38. Ethel Brown, Lazzaro Spallanzani and Rene Reaumur contributed valuable information regarding regeneration through their pioneering studies in the following animal models respectively.
- Hydra, Salamander and Crayfish
 - Salamander, Hydra and Crayfish
 - Crayfish, Salamander and Hydra
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39. Which among the following is incorrect with respect to the Nieuwkoop center of the amphibian development?
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40. Which of the following deuterostome does not show true enterocoelic mode of coelom formation?
- Frog
 - Star fish
 - Amphioxus
 - Balanoglossus
41. A graph showing two humps of greatest frequency is said to be
- Bimodal
 - Binodal
 - Bionominal
 - Bivariate

42. The median of the following scores is: 25,12, 20,18,22,15
- A. 18
 - B. 19
 - C. 20
 - D. 25
43. With the following values in a distribution i.e Mean: 50; Median: 60 and Mode: 70, what kind of a graph would you predict?
- A. Positively skewed
 - B. Negatively skewed
 - C. Normal distribution
 - D. Bimodal distribution
44. If the variance is 9 and sum of squares is 900, how much is “n”?
- A. 100
 - B. 90
 - C. 10
 - D. 20
45. Considering normal distribution, what proportion of the scores lie within the range of two standard deviations?
- A. 0.95
 - B. 0.85
 - C. 85.0
 - D. 95.0
46. If both male and female have the gene for a trait in the genotype, however, it gets expressed only in the female, then the type of inheritance is referred to as:
- A. Sex linked inheritance
 - B. Sex limited inheritance
 - C. Maternal inheritance
 - D. Epistasis
47. The expression of eye color in the humans is controlled by:
- A. Multiple alleles
 - B. Multiple genes
 - C. Dominant gene
 - D. Co-dominant gene
48. The maximum frequency of recombination that can result from crossing-over between linked genes is _____.
- A. 25 %
 - B. 50 %
 - C. 75 %
 - D. 100 %
49. The phenotypic ratio of F₂ generation, where a gene for a character shows recessive epistasis, would be:
- A. 9: 3: 3: 1
 - B. 12: 3: 1
 - C. 9: 3: 4
 - D. 1: 2: 1

50. Change in the linking number of covalently closed circular (ccc) DNA in two steps at a time is brought about by:
- A. Type I topoisomerase
 - B. DNA ligase
 - C. Type II topoisomerase
 - D. None of the above
51. During digestion of food (plant/animal source) what is the fate of the DNA content?
- A. DNA remains undigested and are excreted
 - B. DNA does not need to be digested as it is very small and gets absorbed in intestine
 - C. DNA is digested and absorbed in intestine
 - D. The exact fate of DNA digestion and absorption in humans is not yet discovered
52. The enzyme required for synthesizing DNA was first crystallized by_____.
- A. Watson & Crick
 - B. Arthur Kornberg
 - C. E. Chargaff
 - D. T.H. Morgan
53. The wall of stomach does not dissolve under the action of HCl. Why?
- A. Because it is made of chitin
 - B. Because the wall of stomach is covered with mucous
 - C. Because the wall of stomach is made of very strong muscles
 - D. Because the HCL secreted in stomach is very dilute
54. **Statement 1:** In mammals and birds 1st, 2nd and 3rd aortic arches develop into carotid, systemic and pulmonary arch respectively.
Statement 2: 1st, 2nd and 3rd arches are lost during evolution in mammals
- A. Both statements 1 and 2 are false
 - B. Both statements 1 and 2 are true
 - C. Statement 1 is true and 2 is false
 - D. Statement 1 is false and 2 is true
55. Which of the following animals correctly depicts the length of loop of Henle (in kidney) in an ascending sequence?
- A. Elephant – Calotes – Kangaroo rat
 - B. Calotes – Elephant - Kangaroo rat
 - C. Kangaroo rat – Calotes – Elephant
 - D. Calotes - Kangaroo rat - Elephant
56. Which of the following correctly depicts fact about catadromous and anadromous fishes?
- A. Catadromous fishes migrate from sea to fresh water and anadromous fishes migrate from freshwater to sea.
 - B. Catadromous fishes migrate from freshwater to sea and anadromous fishes migrate from sea to fresh water.
 - C. Catadromous fishes migrate from brackish water to freshwater whereas anadromous fishes migrate from pond water to rivers.
 - D. Fishes never migrate from one type of water to another due to difference in salinity.

57. When cerebellum of a bird is surgically removed what will be the consequence
Statement A: It cannot walk or fly
Statement B: It will stop feeding
A. both statements A & B are true
B. A is true but B is false
C. B is true but A is false
D. both A & B are false.
58. Intergalactic dust was generated from the explosion of
A. Black hole
B. Brown dwarf
C. Centripetal force of ions and molecules
D. Supernova
59. **Statement A:** The earth's present atmosphere oxygen is in highest content.
Statement B: The second highest gas in earth's atmosphere is nitrogen.
A. Both A and B are true
B. A is true but B is false
C. B is true but A is false
D. Both A and B are false
60. Which of the following is not a consequence of global climate change?
A. Increased air temperature
B. Tsunami and earthquakes
C. Polar ice melting
D. Rise in Sea level
61. Which of the following countries recently faced the tremendous effect of "Heat Dome" phenomenon?
A. United States of America and Canada
B. China and Russia
C. Australia and New Zealand
D. Middle east countries
62. According to Shelford's law of tolerance an organism with wide tolerance limit for environmental factors usually show
A. Wide distribution with low population size
B. Wide distribution with high population size
C. Narrow distribution with low population size
D. Narrow distribution with high population size
63. Continental drift theory indicates that earth was a single mass from which land masses drifted in different directions to establish present distribution of land. The theory was proposed by
A. Alfred Wegener
B. Charles Darwin
C. Schleiden and Schwann
D. Ernest Mayr

64. In birds, the sex chromosomes are denoted as
- ZZ for male and WZ for female
 - XZ for male and YZ for female
 - XO for male and XX for female
 - CC for male and BB for female
65. Which of the following best describes the function of DNA gyrase?
- Statement A: Introduction of negative supercoil in DNA
Statement B: Functions same as DNA topoisomerase
Statement C: Relax positive DNA supercoil
- A, B, C are true
 - A, B are true C is false
 - A, C are true B is false
 - B, C are true A is false
66. The subunit of prokaryotic ribosomes are:
- 60 S + 40 S
 - 70 S + 30 S
 - 60 S + 30 S
 - 50 S + 30 S
67. In a COVID19 test, a sample is analyzed by an RT-PCR test. The Ct value of 20 indicates which of the following?
- The virus is inactivated at 20°C temperature
 - 20 viruses are present in the sample collected
 - 20 cycles are required to detect the virus
 - Virus has approximately 20 mutations at the time of sample collection
68. Mark the correct statement regarding the nucleic acid structure:
- Purines are double ringed structures
 - DNA helical structure proposed by Watson and Crick resembles the A-form
 - The pentose ring binds to the nitrogen base at 2' carbon position
 - The complimentary bases are bound by glycosidic bonds
69. Which of the following characteristic features does not match with that of crocodiles?
- Cold blooded vertebrates
 - Three-chambered heart
 - Possession of dry skin
 - Oviparous
70. Which of the following best describes 'corridor habitats' in India?
- Habitat that are fragmented and not connected with any other forest.
 - Habitat that are on the periphery of the forest.
 - Habitat that connects two major protected areas.
 - Habitat that has a road passing through that divides it into two parts.
71. Why is the 'pug mark' census method not preferred for tiger or leopard count?
- High risk of life is involved in this type of census
 - The animals can get disturbed due to equipment used in pugmark census
 - Animals of same species have same pugmarks and hence cannot be differentiated
 - Pugmarks appear to be different in varying soil types creating errors

72. Which one of the following sub-regions is also known as “Marsupial home”
- A. Austro-Malayan
 - B. Polynesian
 - C. Australian
 - D. New Zealand
73. When a bird while feeding catches its prey by talons, it is called as?
- A. Raptorial feeding
 - B. Scavenging
 - C. Klepto-parasitism
 - D. Filter feeding
74. Zoonoses are those diseases and infections which are naturally transmitted between vertebrate animals and man. Which according to you is the correct option explaining factors influencing prevalence of zoonoses
- A. Ecological changes in man’s environment
 - B. Handling animal by-products and wastes
 - C. Increased density of animal population
 - D. All of the above
75. The outcomes of multi-specific interactions underpin the evolutionary process of the partner species involved. Which one of the following statements are closely related to this concept?
- i. Coevolution is evolution of interacting partners
 - ii. The coevolutionary process involves the joint evolutionary trajectories of two separate gene pools that do not mix
 - iii. Coevolution is one of the many outcomes of plant-animal mutualisms.
- A. Only i
 - B. i and ii
 - C. i,ii,iii
 - D. Only iii
76. Animals disperse seeds by _____
- A. Eating seeds and dropping waster later on
 - B. Hiding seeds in some space for later use and not paying attention to it.
 - C. Catching seeds on their fur and carrying them to different places
 - D. All of the above
77. What is a competition between the individuals of two separate species for sharing the same resources in the same area known?
- A. Apparent competition
 - B. Interspecific competition
 - C. Interference competition
 - D. Intraspecific competition
78. One of the following options is True that explains the relationship between individuals of two species of which one is benefited and the other is almost unaffected
- A. Parasitism
 - B. Commensalism
 - C. Symbiosis
 - D. Predation

79. Systematics deals with
- A. Identification of organism
 - B. Classification of organisms
 - C. The kinds and diversity of all organisms and the existing relationships amongst themselves
 - D. Identification, naming and classification of both plants and animals
80. Cladograms are constructed by grouping organisms together based on their _____ characteristics.
- A. Shared
 - B. Similar
 - C. Different
 - D. Opposite
81. One of the following is NOT true:
- A. Protists include protozoans and other eukaryotes below the tissue level of organization
 - B. Protists include only protozoans
 - C. Prokaryotes do not have nuclei or other membrane-bound organelles
 - D. Prokaryotes do not exhibit photosynthesis
82. **Assertion:** Leglessness is an apomorphy for snakes.
Reason: Snakes lost complex traits such as limbs for adaptation in course of evolution.
- A. Both assertion and reason are true and reason is the correction explanation of assertion
 - B. Both assertion and reason are true but reason is not the correct explanation of the assertion
 - C. Assertion is true but reason is false
 - D. Both assertion and reason are false
83. In phylogeny that have a sister group, one of the following is the most appropriate option:
- A. Two descendants that split from the same node
 - B. Two descendants that split from the different node
 - C. A taxon outside the group of interest
 - D. Two descendants that do not share all the characteristics.
84. Scientific name of Indian domesticated honey bee is:
- A. *Apis florum*
 - B. *Apis indica*
 - C. *Apis mellifera*
 - D. *Apis dorsata*
85. The smallest known mammal belongs to:
- A. Rodentia
 - B. Monotremes
 - C. Chiroptera
 - D. Soricomorpha

86. Most annelids metamorphose through _____ larval stage.
- A. Tornaria larva
 - B. Planula larva
 - C. Trochophore larva
 - D. Veliger larva
87. A shark hunts for its prey mostly with the help of its sense organs. Which of the following is used to recognize the prey from a distance?
- A. Ommatidia
 - B. Ampullae of Lorenzini
 - C. Rhabdites
 - D. Weberian ossicles
88. Which of the following statements about isoelectric focusing is correct?
- A. Proteins separated by isoelectric focusing cannot be tested for biological activity.
 - B. Proteins separated by isoelectric focusing can be tested for biological activity.
 - C. The separation of proteins by isoelectric focusing is only based on charge.
 - D. The separation of proteins by isoelectric focusing is only based on size.
89. Which of the following statements about column chromatography is NOT correct?
- A. Affinity chromatography involves the attachment to the column matrix of groups or molecules known that specifically bind to the wanted protein.
 - B. In reverse phase chromatography the wanted protein can be selectively eluted by solutions of different hydrophobicities or ionic strengths.
 - C. Ion-exchange chromatography involves the use of different ionic groups attached to the column matrix that specifically bind to the wanted protein.
 - D. Gel-filtration chromatography separates proteins on their ability to bind to specific groups on the column matrix.
90. What would the expected effect be on a PCR reaction if the primers used were slightly shorter and more variable than the intended oligonucleotide sequences?
- A. The PCR reaction would not commence
 - B. The PCR reaction would end after one cycle
 - C. The reaction would generate a single short PCR product
 - D. The reaction would yield a mixture of non-specific products
91. Which of the following is immobilized on the microtiter well in sandwich ELISA?
- A. Detection antibody
 - B. Sample
 - C. Capture antibody
 - D. Secondary antibody conjugated to an enzyme
92. In Column chromatography, the stationary phase is made of _____ and the mobile phase is made of _____
- A. Solid, liquid
 - B. Liquid, liquid
 - C. Liquid, gas
 - D. Solid, gas

93. How many moles of HCl are there in 10 mL of a solution with a concentration of 0.5 mol L^{-1} ?
- 5 mol
 - 0.5 mol
 - 0.05 mol
 - 1 mol
94. Which one of the following is equal to the $\text{p}K_a$ of a weak acid?
- Its relative molecular mass
 - The $\text{p}K_b$ of its conjugate base
 - The pH of a solution containing equal amounts of the acid and its conjugate base
 - The equilibrium concentration of its conjugate base
95. Which of the following cell types mediates adaptive immune responses?
- Dendritic cell
 - Lymphocyte
 - Macrophage
 - Natural Killer cell
96. Which of the following statements about Michaelis-Menten kinetics is correct?
- K_m , the Michaelis constant, is defined as the concentration of substrate required for the reaction to reach maximum velocity.
 - K_m , the Michaelis constant, is defined as the dissociation constant of the enzyme-substrate complex.
 - K_m , the Michaelis constant, is expressed in terms of the reaction velocity.
 - K_m , the Michaelis constant, is a measure of the affinity enzyme has for its substrate.
97. Which of the following statements about the integration of fat and carbohydrate metabolism control in diabetes mellitus is correct?
- High insulin/glucagon ratio inactivates lipolysis in liver.
 - High insulin/glucagon ratio activates lipolysis in adipocytes.
 - Low insulin/glucagon ratio activates lipolysis in adipocytes.
 - Insulin-dependent glucose transporters are recruited to their functional membrane site.
98. What do helper (CD4) T cells bind to?
- Class I MHC / peptide complexes found on all body cells
 - Class II MHC / peptide complexes found mainly on antigen presenting cells
 - The three dimensional (or tertiary) structure of a pathogen
 - Pathogen associated molecular patterns (PAMPs)
99. Which of the following separation techniques is dependent on difference in volatility?
- Crystallization
 - Magnetic separation
 - Fractional crystallization
 - Distillation
100. Human immunodeficiency virus (HIV) is the major cause of secondary immunodeficiency, though not the only one. Which immune effector does it target?
- CD4 expressing T cells
 - CD8 expressing T cells
 - B cells
 - Plasma cells

END OF PAPER

B

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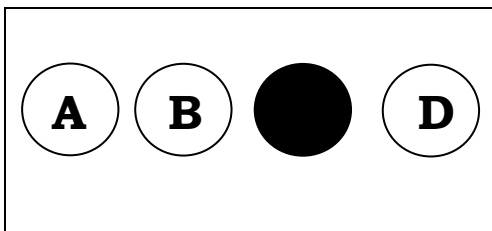
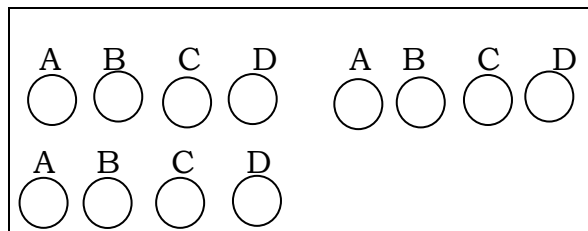


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11. A graph showing two humps of greatest frequency is said to be
- A. Bimodal
 - B. Binodal
 - C. Binominal
 - D. Bivariate
12. The median of the following scores is: 25,12, 20,18,22,15
- A. 18
 - B. 19
 - C. 20
 - D. 25
13. With the following values in a distribution i.e Mean: 50; Median: 60 and Mode: 70, what kind of a graph would you predict?
- A. Positively skewed
 - B. Negatively skewed
 - C. Normal distribution
 - D. Bimodal distribution
14. If the variance is 9 and sum of squares is 900, how much is “n”?
- A. 100
 - B. 90
 - C. 10
 - D. 20
15. Considering normal distribution, what proportion of the scores lie within the range of two standard deviations?
- A. 0.95
 - B. 0.85
 - C. 85.0
 - D. 95.0
16. If both male and female have the gene for a trait in the genotype, however, it gets expressed only in the female, then the type of inheritance is referred to as:
- A. Sex linked inheritance
 - B. Sex limited inheritance
 - C. Maternal inheritance
 - D. Epistasis

17. The expression of eye color in the humans is controlled by:
- A. Multiple alleles
 - B. Multiple genes
 - C. Dominant gene
 - D. Co-dominant gene
18. The maximum frequency of recombination that can result from crossing-over between linked genes is _____.
- A. 25 %
 - B. 50 %
 - C. 75 %
 - D. 100 %
19. The phenotypic ratio of F₂ generation, where a gene for a character shows recessive epistasis, would be:
- A. 9: 3: 3: 1
 - B. 12: 3: 1
 - C. 9: 3: 4
 - D. 1: 2: 1
20. Change in the linking number of covalently closed circular (ccc) DNA in two steps at a time is brought about by:
- A. Type I topoisomerase
 - B. DNA ligase
 - C. Type II topoisomerase
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46. Animals disperse seeds by _____
- A. Eating seeds and dropping waste later on
 - B. Hiding seeds in some space for later use and not paying attention to it.
 - C. Catching seeds on their fur and carrying them to different places
 - D. All of the above
47. What is a competition between the individuals of two separate species for sharing the same resources in the same area known?
- A. Apparent competition
 - B. Interspecific competition
 - C. Interference competition
 - D. Intraspecific competition
48. One of the following options is True that explains the relationship between individuals of two species of which one is benefited and the other is almost unaffected
- A. Parasitism
 - B. Commensalism
 - C. Symbiosis
 - D. Predation
49. Systematics deals with
- A. Identification of organism
 - B. Classification of organisms
 - C. The kinds and diversity of all organisms and the existing relationships amongst themselves
 - D. Identification, naming and classification of both plants and animals
50. Cladograms are constructed by grouping organisms together based on their _____ characteristics.
- A. Shared
 - B. Similar
 - C. Different
 - D. Opposite
51. One of the following is NOT true:
- A. Protists include protozoans and other eukaryotes below the tissue level of organization
 - B. Protists include only protozoans
 - C. Prokaryotes do not have nuclei or other membrane-bound organelles
 - D. Prokaryotes do not exhibit photosynthesis
52. **Assertion:** Leglessness is an apomorphy for snakes.
Reason: Snakes lost complex traits such as limbs for adaptation in course of evolution.
- A. Both assertion and reason are true and reason is the correct explanation of assertion
 - B. Both assertion and reason are true but reason is not the correct explanation of the assertion
 - C. Assertion is true but reason is false
 - D. Both assertion and reason are false

53. In phylogeny that have a sister group, one of the following is the most appropriate option:
- A. Two descendants that split from the same node
 - B. Two descendants that split from the different node
 - C. A taxon outside the group of interest
 - D. Two descendants that do not share all the characteristics.
54. Scientific name of Indian domesticated honey bee is:
- A. *Apis florea*
 - B. *Apis indica*
 - C. *Apis mellifera*
 - B. *Apis dorsata*
55. The smallest known mammal belongs to:
- A. Rodentia
 - B. Monotremes
 - C. Chiroptera
 - D. Soricomorpha
56. Most annelids metamorphose through _____ larval stage.
- A. Tornaria larva
 - B. Planula larva
 - C. Trochophore larva
 - D. Veliger larva
57. A shark hunts for its prey mostly with the help of its sense organs. Which of the following is used to recognize the prey from a distance?
- A. Ommatidia
 - B. Ampullae of Lorenzini
 - C. Rhabdites
 - D. Weberian ossicles
58. Which of the following statements about isoelectric focusing is correct?
- A. Proteins separated by isoelectric focusing cannot be tested for biological activity.
 - B. Proteins separated by isoelectric focusing can be tested for biological activity.
 - C. The separation of proteins by isoelectric focusing is only based on charge.
 - D. The separation of proteins by isoelectric focusing is only based on size.
59. Which of the following statements about column chromatography is NOT correct?
- A. Affinity chromatography involves the attachment to the column matrix of groups or molecules known that specifically bind to the wanted protein.
 - B. In reverse phase chromatography the wanted protein can be selectively eluted by solutions of different hydrophobicities or ionic strengths.
 - C. Ion-exchange chromatography involves the use of different ionic groups attached to the column matrix that specifically bind to the wanted protein.
 - D. Gel-filtration chromatography separates proteins on their ability to bind to specific groups on the column matrix.
60. What would the expected effect be on a PCR reaction if the primers used were slightly shorter and more variable than the intended oligonucleotide sequences?
- A. The PCR reaction would not commence
 - B. The PCR reaction would end after one cycle
 - C. The reaction would generate a single short PCR product
 - D. The reaction would yield a mixture of non-specific products

61. Which of the following is immobilized on the microtiter well in sandwich ELISA?
- Detection antibody
 - Sample
 - Capture antibody
 - Secondary antibody conjugated to an enzyme
62. In Column chromatography, the stationary phase is made of _____ and the mobile phase is made of _____
- Solid, liquid
 - Liquid, liquid
 - Liquid, gas
 - Solid, gas
63. How many moles of HCl are there in 10 mL of a solution with a concentration of 0.5 mol L⁻¹?
- 5 mol
 - 0.5 mol
 - 0.05 mol
 - 1 mol
64. Which one of the following is equal to the pK_a of a weak acid?
- Its relative molecular mass
 - The pK_b of its conjugate base
 - The pH of a solution containing equal amounts of the acid and its conjugate base
 - The equilibrium concentration of its conjugate base
65. Which of the following cell types mediates adaptive immune responses?
- Dendritic cell
 - Lymphocyte
 - Macrophage
 - Natural Killer cell
66. Which of the following statements about Michaelis-Menten kinetics is correct?
- K_m, the Michaelis constant, is defined as the concentration of substrate required for the reaction to reach maximum velocity.
 - K_m, the Michaelis constant, is defined as the dissociation constant of the enzyme-substrate complex.
 - K_m, the Michaelis constant, is expressed in terms of the reaction velocity.
 - K_m, the Michaelis constant, is a measure of the affinity enzyme has for its substrate.
67. Which of the following statements about the integration of fat and carbohydrate metabolism control in diabetes mellitus is correct?
- High insulin/glucagon ratio inactivates lipolysis in liver.
 - High insulin/glucagon ratio activates lipolysis in adipocytes.
 - Low insulin/glucagon ratio activates lipolysis in adipocytes.
 - Insulin-dependent glucose transporters are recruited to their functional membrane site.
68. What do helper (CD4) T cells bind to?
- Class I MHC / peptide complexes found on all body cells
 - Class II MHC / peptide complexes found mainly on antigen presenting cells
 - The three dimensional (or tertiary) structure of a pathogen
 - Pathogen associated molecular patterns (PAMPs)

69. Which of the following separation techniques is dependent on difference in volatility?
- A. Crystallization
 - B. Magnetic separation
 - C. Fractional crystallization
 - D. Distillation
70. Human immunodeficiency virus (HIV) is the major cause of secondary immunodeficiency, though not the only one. Which immune effector does it target?
- A. CD4 expressing T cells
 - B. CD8 expressing T cells
 - C. B cells
 - D. Plasma cells
71. How does expression vector differ from cloning vector?
- A. By restriction site
 - B. Origin of replication
 - C. Control elements
 - D. Marker genes
72. Extra chromosomal bacterial DNA is termed as _____ and is also used as vector.
- A. Cosmid
 - B. Phasmid
 - C. Plasmid
 - D. Nucleoid
73. One of the following statements for plasmid is correct.
- A. Plasmids are double stranded DNA
 - B. Plasmids are presents in eukaryotic cell
 - C. Plasmids are made up of RNA and protein
 - D. Plasmids are mitochondrial DNA
74. One of the following enzymes is used to cut DNA molecules in rDNA technology.
- A. Ligase
 - B. Exonuclease
 - C. Isomerase
 - D. Restriction enzyme
75. Region within the plasmid which contains a site for many restriction enzymes and they are not present anywhere else in the plasmid is called_____.
- A. Multiple cloning site
 - B. Selective marker site
 - C. Origin of replication site
 - D. Reporter gene
76. Which one of the following laboratory animal is most suitable for corneal relax study?
- A. Rat
 - B. Mouse
 - C. Hamster
 - D. Rabbit

77. The dog breed used in most of toxicological study is_____.
- A. Golden retrieval
 - B. Labrador
 - C. Beagle
 - D. German shepherd
78. For what specific reason, euthanasia is preferred for lab animals?
- A. Less pain
 - B. Growth
 - C. Disturbed neuronal coordination
 - D. Muscle dysfunction
79. Which of these is NOT a reason that *C. elegans* is a good biological model organism?
- A. Its maintenance is very expensive.
 - B. It is transparent.
 - C. Its genome sequence and cell lineage are already known.
 - D. It is parasitic and can be used as a disease model
80. The local body for approval of animal experiment is IAEC. It stands for:
- A. Institutional Animal Ethics Committee
 - B. Institute animal ethical Cooperation
 - C. Institutional animal ethical Cooperation
 - D. Institutional animal ethical Corporate
81. The cylindrical channels in gap junctions are made of:
- A. Connexin
 - B. Collagen
 - C. Fibronectin
 - D. NCAM
82. Which of the following is NOT an extracellular matrix protein?
- A. Fibronectin
 - B. Vitronectin
 - C. Laminin
 - D. Cyclin
83. Actin filaments are involved in all of the following except
- A. Amoeboid movement
 - B. Cytoplasmic streaming
 - C. Contraction of smooth muscle
 - D. Flagellar movement in bacteria
84. Which of the following hormone does NOT act by second messenger system?
- A. Glucagon
 - B. Epinephrine
 - C. Luteinizing hormone
 - D. Aldosterone
85. BCL2 and Bax proteins involved in apoptosis are
- A. Pro-apoptotic and anti-apoptotic
 - B. Both Proapoptotic
 - C. Both antiapoptotic
 - D. Anti-apoptotic and pro-apoptotic

86. _____ part of the metathoracic leg of worker bee is modified into pollen basket.
- A. Femur
 - B. Tibia
 - C. Trochanter
 - D. Tarsal claws
87. _____ is mulberry silkworm.
- A. *Attacus atlas*
 - B. *Bombyx mori*
 - C. *Antheraea mylitta*
 - D. *Antheraea assamensis*
88. Royal jelly is produced from _____ gland of worker bee.
- A. Wax gland
 - B. Abdominal gland
 - C. Mandibular gland
 - D. Antennal gland
89. Which of the statement regarding Lac insect is TRUE?
- A. It secretes lac from the hind part of the body
 - B. The male lac insect is used for large scale production of lac.
 - C. Inserts its proboscis into plant and deposit lac into plant
 - D. Lac insect is microscopic.
90. A specific sign stimulus acts on a specific locus; a lock and key analogy is often used to clarify the relationship of the sign stimulus and _____.
- A. Innate releasing mechanism
 - B. Fixed action pattern
 - C. Action specific energy
 - D. Aggressive behaviour patterns
91. Amazon basin frogs are often brilliantly coloured and easy to spot in the forest. It is an example of:
- A. Batesian mimicry
 - B. Warning colouration
 - C. Mullerian mimicry
 - D. Cryptic colouration
92. Which of the following is signal intended for conspecifics?
- A. Allomones
 - B. Hormones
 - C. Pheromones
 - D. Echo
93. Chemotaxis refers to navigation of movement using:
- A. Chemical gradients
 - B. Light sources
 - C. Water current
 - D. Wind direction

94. Production of delayed effect in receiver by Pheromone is called:
- A. Primer effect
 - B. Releaser effect
 - C. Altruism
 - D. Lee- Boot effect
95. Which of the following is a secondary lymphoid organ?
- A. Bone marrow
 - B. Hypothalamus
 - C. Spleen
 - D. Thymus
96. Which of the following is a reptile showing discontinuous distribution?
- A. Sphenodon
 - B. Varanus
 - C. Peripatus
 - D. Neoceratodus
97. The native of flightless bird, Kiwi, is:
- A. Neo-tropical region
 - B. Ethiopian region
 - C. Australian region
 - D. Oriental region
98. Ethiopian zoogeographic region is a part of ancient landmass known as:
- A. Pangea
 - B. Gondwana
 - C. Laurasia
 - D. Siberia
99. Presence of brood pouch as parental care behavior is found in the fishes of which family?
- A. Clupiadae
 - B. Chiremaidae
 - C. Syngnathidae
 - D. Stromateidae
100. The connecting link between Annelida and Mollusca is:
- A. Neopilina
 - B. Peripatus
 - C. Nautilus
 - D. Balanoglossus

END OF PAPER

C

Test Registration No. _____

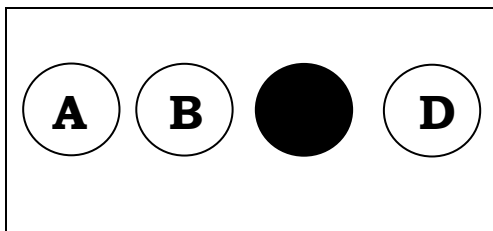
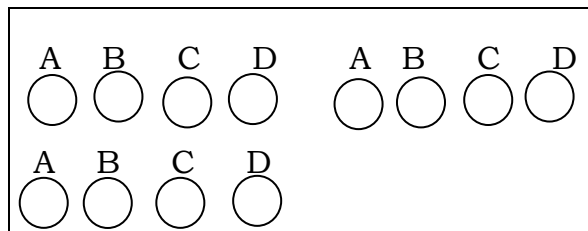


The Maharaja Sayajirao University of Baroda
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M.Sc. ENTRANCE EXAMINATION

SUBJECT: ZOOLOGY**TIME : 2.30 PM TO 4.00 PM****DAY: MONDAY****DATE: 4th JULY 2022****Important Instructions:**

1. This test booklet is to be opened only when instructed by the invigilators to do so.
2. This booklet carries **100** questions in **13** printed pages. All carry equal marks.
3. For every correct answer, candidate will earn **1** mark, for every wrong answer **0.25** mark will be deducted.
4. Test Registration Number must be entered correctly in the OMR answer sheet, as advised by the invigilators. The Question Booklet code (A/B/C/D) must also be mentioned on the OMR answer sheet (if not printed already) as instructed.
5. Answers must be marked in the OMR answer sheet using a black or dark blue ball point pen only. The circle should be filled in completely, leaving no gaps.
6. Gadgets (Mobile phones, pagers, ear phones, music players, calculators smart watches etc.) are strictly prohibited in the exam hall. If any candidate is found in possession of any of these at his/her exam seat, he/she is liable to be disqualified.
7. In case of tie in the marks the merit will be considered based on total marks in qualifying examination.

Correct way of marking answer:**Incorrect way of marking answer:****Invigilator's Signature:** _____

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 - C. Mullerian mimicry
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- A. Allomones
 - B. Hormones
 - C. Pheromones
 - D. Echo
73. Chemotaxis refers to navigation of movement using:
- A. Chemical gradients
 - B. Light sources
 - C. Water current
 - D. Wind direction
74. Production of delayed effect in receiver by Pheromone is called:
- A. Primer effect
 - B. Releaser effect
 - C. Altruism
 - D. Lee- Boot effect
75. Which of the following is a secondary lymphoid organ?
- A. Bone marrow
 - B. Hypothalamus
 - C. Spleen
 - D. Thymus
76. Which of the following is a reptile showing discontinuous distribution?
- A. Sphenodon
 - B. Varanus
 - C. Peripatus
 - D. Neoceratodus
77. The native of flightless bird, Kiwi, is:
- A. Neo-tropical region
 - B. Ethiopian region
 - C. Australian region
 - D. Oriental region

78. Ethiopian zoogeographic region is a part of ancient landmass known as:
- Pangea
 - Gondwana
 - Laurasia
 - Siberia
79. Presence of brood pouch as parental care behavior is found in the fishes of which family?
- Clupiadae
 - Chiremidae
 - Syngnathidae
 - Stromateidae
80. The connecting link between Annelida and Mollusca is:
- Neopilina
 - Peripatus
 - Nautilus
 - Balanoglossus
81. The Walrus, Sea lion and Seals are found in the following zoogeographic realm:
- Neotropical region
 - Australian region
 - Nearctic region
 - Oriental region
82. During gastrulation, the cellular movements, wherein, the expanding outer layer spreads over the internal surface of the remaining external cells of the embryo, is known as:
- Involution
 - Invagination
 - Epiboly
 - Convergence
83. Which amongst the following are amniotic?
- Fishes, Amphibians and Reptiles
 - Amphibians and Reptiles
 - Amphibians, Reptiles and Aves
 - Reptiles, Aves and Mammals
84. The cell-tissue grade of organization is found in:
- Protista
 - Porifera
 - Cnidaria
 - Echinodermata
85. Which amongst the following arise from the embryonic ectoderm?
- Epidermal cells, neurons, pigment cells
 - Osteocytes, neurons, cardiocytes
 - Osteocytes, RBCs, cardiocytes
 - Skeletal muscles and cardiac muscle

86. In spermatogenesis, the phase of maturation involves:
- A. The formation of PGC from the spermatocytes through meiosis
 - B. The formation of spermatids from primary spermatocytes through meiosis
 - C. The growth of spermatogonia into primary spermatocytes
 - D. The formation of spermatogonia from gonocytes through mitosis
87. Which animals produce alecithal eggs?
- A. Reptiles
 - B. Prototherian Mammals
 - C. Birds
 - D. Eutherian Mammals
88. Ethel Brown, Lazzaro Spallanzani and Rene Reaumur contributed valuable information regarding regeneration through their pioneering studies in the following animal models respectively.
- A. Hydra, Salamander and Crayfish
 - B. Salamander, Hydra and Crayfish
 - C. Crayfish, Salamander and Hydra
 - D. Hydra, Crayfish and Salamander
89. Which among the following is incorrect with respect to the Nieuwkoop center of the amphibian development?
- A. Responsible for dorso-ventral polarity establishment
 - B. Located in the vegetal region of the developing blastocoel
 - C. Forms subsequent to the dorsal lip establishment
 - D. All of the above
90. Which of the following deuterostome does not show true enterocoelic mode of coelom formation?
- A. Frog
 - B. Star fish
 - C. Amphioxus
 - D. Balanoglossus
91. A graph showing two humps of greatest frequency is said to be
- A. Bimodal
 - B. Binodal
 - C. Bionominal
 - D. Bivariate
92. The median of the following scores is: 25,12, 20,18,22,15
- A. 18
 - B. 19
 - C. 20
 - D. 25
93. With the following values in a distribution i.e Mean: 50; Median: 60 and Mode: 70, what kind of a graph would you predict?
- A. Positively skewed
 - B. Negatively skewed
 - C. Normal distribution
 - D. Bimodal distribution

94. If the variance is 9 and sum of squares is 900, how much is “n”?
- A. 100
 - B. 90
 - C. 10
 - D. 20
95. Considering normal distribution, what proportion of the scores lie within the range of two standard deviations?
- A. 0.95
 - B. 0.85
 - C. 85.0
 - D. 95.0
96. If both male and female have the gene for a trait in the genotype, however, it gets expressed only in the female, then the type of inheritance is referred to as:
- A. Sex linked inheritance
 - B. Sex limited inheritance
 - C. Maternal inheritance
 - D. Epistasis
97. The expression of eye color in the humans is controlled by:
- A. Multiple alleles
 - B. Multiple genes
 - C. Dominant gene
 - D. Co-dominant gene
98. The maximum frequency of recombination that can result from crossing-over between linked genes is _____.
- A. 25 %
 - B. 50 %
 - C. 75 %
 - D. 100 %
99. The phenotypic ratio of F₂ generation, where a gene for a character shows recessive epistasis, would be:
- A. 9: 3: 3: 1
 - B. 12: 3: 1
 - C. 9: 3: 4
 - D. 1: 2: 1
100. Change in the linking number of covalently closed circular (ccc) DNA in two steps at a time is brought about by:
- A. Type I topoisomerase
 - B. DNA ligase
 - C. Type II topoisomerase
 - D. None of the above

END OF PAPER

D

Test Registration No. _____

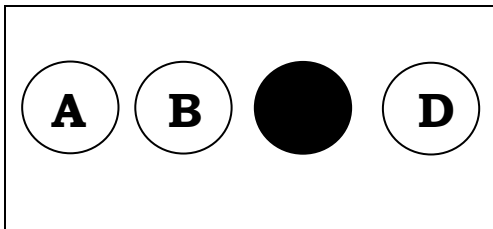
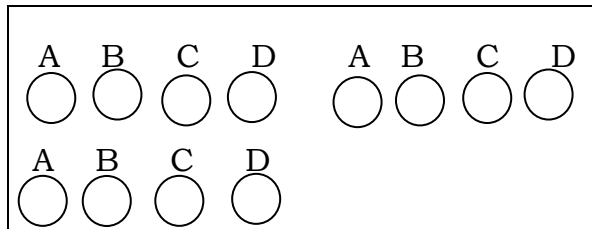


The Maharaja Sayajirao University of Baroda
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M.Sc. ENTRANCE EXAMINATION

SUBJECT: ZOOLOGY**TIME : 2.30 PM TO 4.00 PM****DAY: MONDAY****DATE: 4th JULY 2022****Important Instructions:**

1. This test booklet is to be opened only when instructed by the invigilators to do so.
2. This booklet carries **100** questions in **13** printed pages. All carry equal marks.
3. For every correct answer, candidate will earn **1** mark, for every wrong answer **0.25** mark will be deducted.
4. Test Registration Number must be entered correctly in the OMR answer sheet, as advised by the invigilators. The Question Booklet code (A/B/C/D) must also be mentioned on the OMR answer sheet (if not printed already) as instructed.
5. Answers must be marked in the OMR answer sheet using a black or dark blue ball point pen only. The circle should be filled in completely, leaving no gaps.
6. Gadgets (Mobile phones, pagers, ear phones, music players, calculators smart watches etc.) are strictly prohibited in the exam hall. If any candidate is found in possession of any of these at his/her exam seat, he/she is liable to be disqualified.
7. In case of tie in the marks the merit will be considered based on total marks in qualifying examination.

Correct way of marking answer:**Incorrect way of marking answer:****Invigilator's Signature:** _____

1. Why is the 'pug mark' census method not preferred for tiger or leopard count?
 - A. High risk of life is involved in this type of census
 - B. The animals can get disturbed due to equipment used in pugmark census
 - C. Animals of same species have same pugmarks and hence cannot be differentiated
 - D. Pugmarks appear to be different in varying soil types creating errors

2. Which one of the following sub-regions is also known as "Marsupial home"?
 - A. Austro-Malayan
 - B. Polynesian
 - C. Australian
 - D. New Zealand

3. When a bird while feeding catches its prey by talons, it is called as?
 - A. Raptorial feeding
 - B. Scavenging
 - C. Klepto-parasitism
 - D. Filter feeding

4. Zoonoses are those diseases and infections which are naturally transmitted between vertebrate animals and man. Which according to you is the correct option explaining factors influencing prevalence of zoonoses
 - A. Ecological changes in man's environment
 - B. Handling animal by-products and wastes
 - C. Increased density of animal population
 - D. All of the above

5. The outcomes of multi-specific interactions underpin the evolutionary process of the partner species involved. Which one of the following statements are closely related to this concept?
 - i. Coevolution is evolution of interacting partners
 - ii. The coevolutionary process involves the joint evolutionary trajectories of two separate gene pools that do not mix
 - iii. Coevolution is one of the many outcomes of plant-animal mutualisms.
 - A. Only i
 - B. i and ii
 - C. i,ii,iii
 - D. Only iii

6. Animals disperse seeds by _____
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- A. Batesian mimicry
 - B. Warning colouration
 - C. Mullerian mimicry
 - D. Cryptic colouration
52. Which of the following is signal intended for conspecifics?
- A. Allomones
 - B. Hormones
 - C. Pheromones
 - D. Echo
53. Chemotaxis refers to navigation of movement using:
- A. Chemical gradients
 - B. Light sources
 - C. Water current
 - D. Wind direction

54. Production of delayed effect in receiver by Pheromone is called:
- A. Primer effect
 - B. Releaser effect
 - C. Altruism
 - D. Lee- Boot effect
55. Which of the following is a secondary lymphoid organ?
- A. Bone marrow
 - B. Hypothalamus
 - C. Spleen
 - D. Thymus
56. Which of the following is a reptile showing discontinuous distribution?
- A. Sphenodon
 - B. Varanus
 - C. Peripatus
 - D. Neoceratodus
57. The native of flightless bird, Kiwi, is:
- A. Neo-tropical region
 - B. Ethiopian region
 - C. Australian region
 - D. Oriental region
58. Ethiopian zoogeographic region is a part of ancient landmass known as:
- A. Pangea
 - B. Gondwana
 - C. Laurasia
 - D. Siberia
59. Presence of brood pouch as parental care behavior is found in the fishes of which family?
- A. Clupiadae
 - B. Chiremaidae
 - C. Syngnathidae
 - D. Stromateidae
60. The connecting link between Annelida and Mollusca is:
- A. Neopilina
 - B. Peripatus
 - C. Nautilus
 - D. Balanoglossus
61. The Walrus, Sea lion and Seals are found in the following zoogeographic realm:
- A. Neotropical region
 - B. Australian region
 - C. Nearctic region
 - D. Oriental region
62. During gastrulation, the cellular movements, wherein, the expanding outer layer spreads over the internal surface of the remaining external cells of the embryo, is known as:
- A. Involution
 - B. Invagination
 - C. Epiboly
 - D. Convergence

63. Which amongst the following are amniotic?
- A. Fishes, Amphibians and Reptiles
 - B. Amphibians and Reptiles
 - C. Amphibians, Reptiles and Aves
 - D. Reptiles, Aves and Mammals
64. The cell-tissue grade of organization is found in:
- A. Protista
 - B. Porifera
 - C. Cnidaria
 - D. Echinodermata
65. Which amongst the following arise from the embryonic ectoderm?
- A. Epidermal cells, neurons, pigment cells
 - B. Osteocytes, neurons, cardiocytes
 - C. Osteocytes, RBCs, cardiocytes
 - D. Skeletal muscles and cardiac muscle
66. In spermatogenesis, the phase of maturation involves:
- A. The formation of PGC from the spermatocytes through meiosis
 - B. The formation of spermatids from primary spermatocytes through meiosis
 - C. The growth of spermatogonia into primary spermatocytes
 - D. The formation of spermatogonia from gonocytes through mitosis
67. Which animals produce alecithal eggs?
- A. Reptiles
 - B. Prototherian Mammals
 - C. Birds
 - D. Eutherian Mammals
68. Ethel Brown, Lazzaro Spallanzani and Rene Reaumur contributed valuable information regarding regeneration through their pioneering studies in the following animal models respectively.
- A. Hydra, Salamander and Crayfish
 - B. Salamander, Hydra and Crayfish
 - C. Crayfish, Salamander and Hydra
 - D. Hydra, Crayfish and Salamander
69. Which among the following is incorrect with respect to the Nieuwkoop center of the amphibian development?
- A. Responsible for dorso-ventral polarity establishment
 - B. Located in the vegetal region of the developing blastocoel
 - C. Forms subsequent to the dorsal lip establishment
 - D. All of the above
70. Which of the following deuterostome does not show true enterocoelic mode of coelom formation?
- A. Frog
 - B. Star fish
 - C. Amphioxus
 - D. Balanoglossus

71. A graph showing two humps of greatest frequency is said to be
- A. Bimodal
 - B. Binodal
 - C. Bionominal
 - D. Bivariate
72. The median of the following scores is: 25,12, 20,18,22,15
- A. 18
 - B. 19
 - C. 20
 - D. 25
73. With the following values in a distribution i.e Mean: 50; Median: 60 and Mode: 70, what kind of a graph would you predict?
- A. Positively skewed
 - B. Negatively skewed
 - C. Normal distribution
 - D. Bimodal distribution
74. If the variance is 9 and sum of squares is 900, how much is “n”?
- A. 100
 - B. 90
 - C. 10
 - D. 20
75. Considering normal distribution, what proportion of the scores lie within the range of two standard deviations?
- A. 0.95
 - B. 0.85
 - C. 85.0
 - D. 95.0
76. If both male and female have the gene for a trait in the genotype, however, it gets expressed only in the female, then the type of inheritance is referred to as:
- A. Sex linked inheritance
 - B. Sex limited inheritance
 - C. Maternal inheritance
 - D. Epistasis
77. The expression of eye color in the humans is controlled by:
- A. Multiple alleles
 - B. Multiple genes
 - C. Dominant gene
 - D. Co-dominant gene
78. The maximum frequency of recombination that can result from crossing-over between linked genes is _____.
- A. 25 %
 - B. 50 %
 - C. 75 %
 - D. 100 %

79. The phenotypic ratio of F₂ generation, where a gene for a character shows recessive epistasis, would be:
- 9: 3: 3: 1
 - 12: 3: 1
 - 9: 3: 4
 - 1: 2: 1
80. Change in the linking number of covalently closed circular (ccc) DNA in two steps at a time is brought about by:
- Type I topoisomerase
 - DNA ligase
 - Type II topoisomerase
 - None of the above
81. During digestion of food (plant/animal source) what is the fate of the DNA content?
- DNA remains undigested and are excreted
 - DNA does not need to be digested as it is very small and gets absorbed in intestine
 - DNA is digested and absorbed in intestine
 - The exact fate of DNA digestion and absorption in humans is not yet discovered
82. The enzyme required for synthesizing DNA was first crystallized by_____.
- Watson & Crick
 - Arthur Kornberg
 - E. Chargaff
 - T.H. Morgan
83. The wall of stomach does not dissolve under the action of HCl. Why?
- Because it is made of chitin
 - Because the wall of stomach is covered with mucous
 - Because the wall of stomach is made of very strong muscles
 - Because the HCL secreted in stomach is very dilute
84. **Statement 1:** In mammals and birds 1st, 2nd and 3rd aortic arches develop into carotid, systemic and pulmonary arch respectively.
Statement 2: 1st, 2nd and 3rd arches are lost during evolution in mammals
- Both statements 1 and 2 are false
 - Both statements 1 and 2 are true
 - Statement 1 is true and 2 is false
 - Statement 1 is false and 2 is true
85. Which of the following animals correctly depicts the length of loop of Henle (in kidney) in an ascending sequence?
- Elephant – Calotes – Kangaroo rat
 - Calotes – Elephant - Kangaroo rat
 - Kangaroo rat – Calotes – Elephant
 - Calotes - Kangaroo rat - Elephant

86. Which of the following correctly depicts fact about catadromous and anadromous fishes?
- Catadromous fishes migrate from sea to fresh water and anadromous fishes migrate from freshwater to sea.
 - Catadromous fishes migrate from freshwater to sea and anadromous fishes migrate from sea to fresh water.
 - Catadromous fishes migrate from brackish water to freshwater whereas anadromous fishes migrate from pond water to rivers.
 - Fishes never migrate from one type of water to another due to difference in salinity.
87. When cerebellum of a bird is surgically removed what will be the consequence
- Statement A:** It cannot walk or fly
Statement B: It will stop feeding
- both statements A & B are true
 - A is true but B is false
 - B is true but A is false
 - both A & B are false.
88. Intergalactic dust was generated from the explosion of
- Black hole
 - Brown dwarf
 - Centripetal force of ions and molecules
 - Supernova
89. **Statement A:** The earth's present atmosphere oxygen is in highest content.
Statement B: The second highest gas in earth's atmosphere is nitrogen.
- Both A and B are true
 - A is true but B is false
 - B is true but A is false
 - Both A and B are false
90. Which of the following is not a consequence of global climate change?
- Increased air temperature
 - Tsunami and earthquakes
 - Polar ice melting
 - Rise in Sea level
91. Which of the following countries recently faced the tremendous effect of "Heat Dome" phenomenon?
- United States of America and Canada
 - China and Russia
 - Australia and New Zealand
 - Middle east countries
92. According to Shelford's law of tolerance an organism with wide tolerance limit for environmental factors usually show
- Wide distribution with low population size
 - Wide distribution with high population size
 - Narrow distribution with low population size
 - Narrow distribution with high population size

93. Continental drift theory indicates that earth was a single mass from which land masses drifted in different directions to establish present distribution of land. The theory was proposed by
- Alfred Wegener
 - Charles Darwin
 - Schleiden and Schwann
 - Ernest Mayr
94. In birds, the sex chromosomes are denoted as
- ZZ for male and WZ for female
 - XZ for male and YZ for female
 - XO for male and XX for female
 - CC for male and BB for female
95. Which of the following best describes the function of DNA gyrase?
- Statement A:** Introduction of negative supercoil in DNA
Statement B: Functions same as DNA topoisomerase
Statement C: Relax positive DNA supercoil
- A, B, C are true
 - A, B are true C is false
 - A, C are true B is false
 - B, C are true A is false
96. The subunit of prokaryotic ribosomes are:
- 60 S + 40 S
 - 70 S + 30 S
 - 60 S + 30 S
 - 50 S + 30 S
97. In a COVID19 test, a sample is analyzed by an RT-PCR test. The Ct value of 20 indicates which of the following?
- The virus is inactivated at 20°C temperature
 - 20 viruses are present in the sample collected
 - 20 cycles are required to detect the virus
 - Virus has approximately 20 mutations at the time of sample collection
98. Mark the correct statement regarding the nucleic acid structure:
- Purines are double ringed structures
 - DNA helical structure proposed by Watson and Crick resembles the A-form
 - The pentose ring binds to the nitrogen base at 2' carbon position
 - The complimentary bases are bound by glycosidic bonds
99. Which of the following characteristic features does not match with that of crocodiles?
- Cold blooded vertebrates
 - Three-chambered heart
 - Possession of dry skin
 - Oviparous
100. Which of the following best describes 'corridor habitats' in India?
- Habitat that are fragmented and not connected with any other forest.
 - Habitat that are on the periphery of the forest.
 - Habitat that connects two major protected areas.
 - Habitat that has a road passing through that divides it into two parts.

END OF PAPER



ZOOLOGY (Key)

THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA
FACULTY OF SCIENCE
ANSWER SHEET

A

REGISTRATION NO.

Registration number grid

Answer Sheet No.:

Date: DDMMYYYY

Registration number bubbles (0-9)

Candidate Sign

Invigilator Sign

INSTRUCTIONS FOR FILLING THE SHEET

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5. Cutting and erasing on this sheet is not allowed.
6. Do not use any stray marks on the sheet.
7. Do not use marker or white fluid to hide the mark.

WRONG METHODS CORRECT METHOD



Main answer grid with 100 numbered rows (1-100) and columns A, B, C, D for marking answers



THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA
FACULTY OF SCIENCE
ANSWER SHEET

B

REGISTRATION NO.

Registration number input boxes

Vertical registration number bubbles (1-0)

Answer Sheet No.:

Date: DDMMYYYY

Candidate Sign

Invigilator Sign

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WRONG METHODS CORRECT METHOD



A B C D

Answers 1-5

A B C D

Answers 21-25

A B C D

Answers 41-45

A B C D

Answers 61-65

A B C D

Answers 81-85

A B C D

Answers 6-10

A B C D

Answers 26-30

A B C D

Answers 46-50

A B C D

Answers 66-70

A B C D

Answers 86-90

A B C D

Answers 11-15

A B C D

Answers 31-35

A B C D

Answers 51-55

A B C D

Answers 71-75

A B C D

Answers 91-95

A B C D

Answers 16-20

A B C D

Answers 36-40

A B C D

Answers 56-60

A B C D

Answers 76-80

A B C D

Answers 96-100



(Zoology) (Key)

THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

FACULTY OF SCIENCE

ANSWER SHEET

C

REGISTRATION NO.

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Answer Sheet No.:

Date: DDMMYYYY

Candidate Sign

Invigilator Sign

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WRONG METHODS CORRECT METHOD



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<p>6 A B C D 7 A B C D 8 A B C D 9 A B C D 10 A B C D</p>	<p>26 A B C D 27 A B C D 28 A B C D 29 A B C D 30 A B C D</p>	<p>46 A B C D 47 A B C D 48 A B C D 49 A B C D 50 A B C D</p>	<p>66 A B C D 67 A B C D 68 A B C D 69 A B C D 70 A B C D</p>	<p>86 A B C D 87 A B C D 88 A B C D 89 A B C D 90 A B C D</p>
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<p>16 A B C D 17 A B C D 18 A B C D 19 A B C D 20 A B C D</p>	<p>36 A B C D 37 A B C D 38 A B C D 39 A B C D 40 A B C D</p>	<p>56 A B C D 57 A B C D 58 A B C D 59 A B C D 60 A B C D</p>	<p>76 A B C D 77 A B C D 78 A B C D 79 A B C D 80 A B C D</p>	<p>96 A B C D 97 A B C D 98 A B C D 99 A B C D 100 A B C D</p>



ZOOLOGY (Key)
THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA
FACULTY OF SCIENCE
ANSWER SHEET

D

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Answer Sheet No.:

Date:

D	D	M	M	Y	Y	Y	Y
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Candidate Sign

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WRONG METHODS **CORRECT METHOD**

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14	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>		34	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>		54	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	74	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>		94	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
15	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>		35	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>		55	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	75	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>		95	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
16	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>		36	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	56	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	76	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>		96	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
17	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>		37	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	57	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	77	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>		97	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
18	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>		38	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>		58	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	78	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>		98	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
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RESULT OF ZOOLOGY PG ENTRANCE TEST HELD ON 4th July 2022, Monday

Exam Seat No.	Marks Obtained (Out of 100)
1	26.25
2	32.5
3	13.75
4	10.5
5	11.75
6	21.5
10	16
12	24.25
13	24.75
14	9.25
17	23.5
18	20.25
19	21.25
21	16.5
22	12.75
23	10
24	20
25	21.25
30	19.75
31	41.5
34	15.5
35	23.25
36	24.75
37	20
41	13.25
42	27
43	21.5
44	8.75
45	17.25
46	18.75
50	19.75
51	15.25
52	24.5
54	4.5
56	29
59	35.75
61	18.5
62	14
63	28
64	18.25

RD

11/11

RD

RD



Exam Seat No.	Marks Obtained (Out of 100)
65	33.75
66	6.5
68	13.5
69	37.25
71	22
72	12.5
73	16.25
75	12.25
76	13.75
79	18.25
80	11.5
81	13.75
82	33.25
83	38
84	11
85	8.75
87	15
88	26.25
89	50.75
90	13.25
91	17.75
92	23.25
93	9.75
94	23.75
95	15.25
97	8.25
98	15
99	15.25
100	5.75
101	0
102	15.75
103	30
104	9.75
105	19.25
106	8.75
107	16.25
109	17.25
110	21.5
111	18.5
112	14.5
113	6.25

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Department of Zoology
Faculty of Science
The Maharaja Sayajirao University of Baroda
Vadodara- 390002, Gujarat, INDIA

Exam Seat No.	Marks Obtained (out of 100)
114	9.75
117	28.75
118	32.25
119	35.5
121	10.75
122	11.5
123	40.5
124	10
127	39.5
130	25
131	11.75
132	45.75
134	11.5
135	9.5
136	19.5
137	15.5
139	15
140	16.25
141	17.75
142	31.25
143	-1.25
144	8.75
145	28
146	16.25
147	10.75
148	3.75
149	11.25
150	24.25
151	21.25
154	37
155	32.5
156	33.75
158	9
159	5.75
160	40.25
161	19.75
163	42.5
164	18.5
165	34.25
166	43.75
167	41.25

RD

2/10/17

GP

SA



Department of Zoology
Faculty of Science
The Maharaja Sayajirao University of Baroda
Vadodara- 390002, Gujarat, INDIA

Exam Seat No.	Marks Obtained (out of 100)
168	13.5
169	11
170	30
171	8.75
172	17.5
173	13



Head, Department of Zoology

Head of the Dept. of Zoology
Faculty of Science
The Maharaja Sayajirao University
of Baroda, Vadodara - 390 002.

Date: 5th July 2022


Dean, Faculty of Science

DEAN
FACULTY OF SCIENCE
M. S. UNIVERSITY OF BARODA
BARODA


(Hetal Roy)



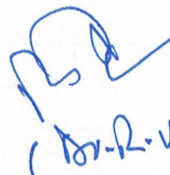
(Dr. U. K. Gowari Kumari)



(Parasit P. Bhatt)

(CHAIRMAN, M.Sc. ZOOLOGY

ADMISSION COMMITTEE)



(Dr. R. V. Desai)

(MEMBERS)